UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

ACBEL POLYTECH, INC., Plaintiff, v. FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC. and FAIRCHILD SEMICONDUCTOR CORP., Defendants.	)	Civil Action No. 13-13046-DJC

MEMORANDUM OF DECISION

CASPER, J. **December 27, 2017**

I. INTRODUCTION

Plaintiff AcBel Polytech, Inc. ("AcBel"), both individually and as assignee of EMC Corporation ("EMC"), alleges that Defendants Fairchild Semiconductor International, Inc. ("Fairchild International") and Fairchild Semiconductor Corp. ("Fairchild US") (collectively, "Defendants") breached the implied warranties of merchantability, Mass. Gen. L. c. 106, § 2-314, and fitness for a particular use, Mass. Gen. L. c. 106, § 2-315, in the design and sale of voltage regulators to AcBel and EMC. After an eight-day bench trial, the Court now issues its findings of facts and conclusions of law on the remaining breach of implied warranty claims and enters judgment for the Defendants.

II. PROCEDURAL HISTORY

AcBel asserted claims of breach of warranty on its own behalf and on EMC's (Counts I, II, XII and XIII); claims for fraud and negligent misrepresentation on its own behalf (Counts III,

IV and V); claims of "design defect – implied warranty/strict liability" on its own behalf and on EMC's (Counts VI and XIV); claims of "design defect – negligence" on its own behalf and on EMC's (Counts VII and XV); claims of "failure to warn – implied warranty/strict liability" on its own behalf and on EMC's (Counts VIII and XVI); claims of "failure to warn – negligence" on its own behalf and on EMC's (Counts IX and XVII); claims of a violation of Mass. Gen. L. c. 93A on its own behalf and on EMC's (Counts X and XVIII); and claims for punitive damages on its own behalf and on EMC's (Counts XI and XIX). On September 12, 2014, the Court denied Defendants' motion to dismiss as to all but the punitive damages claims. D. 43. On December 9, 2016, the Court allowed Defendants' motion for summary judgment as to all the remaining claims except for the breach of implied warranty claims (Counts I, II, XII and XIII). D. 280.

The Court conducted a bench trial on June 19-28, 2017. AcBel called as witnesses Monica Tung ("Tung"), AcBel's supervisor for logistic purchase of electronic components; Tim Daun-Lindberg ("Daun-Lindberg"), AcBel's expert witness; Kirk Olund ("Olund"), Fairchild US's former director of Customer Quality Engineering; Robert Szymanski ("Szymanski"), EMC's engineering manager; Greg Lucini ("Lucini"), International Sourcing and Marketing ("ISMI") president and chief executive officer; Gary Ma ("Ma"), AcBel's assistant plant manager at its headquarters in Taiwan; Jesse Wang ("Wang"), AcBel's director of the regional sales office; Eric Hertz ("Hertz"), a vice president of Fairchild US; David Kao ("Kao"), AcBel's president; and Tony Wan ("Wan"), AcBel's chief operating officer and general manager of AcBel's unit servicing business and enterprise customers. Defendants called Ma, Kao, Wan, Wang, Hertz, Dr. Richard Fair ("Fair"), Defendants' expert witness; Paul Delva ("Delva"), former senior vice president, general counsel, and corporate secretary of Fairchild US, and director of several FSC

subsidiaries; and Phoebe Shum ("Shum"), FSC Hong Kong's former financial controller. Exhibits 1-353 were admitted in evidence at the beginning of trial and Exhibits 332A and 354-479 were admitted during the course of trial. Exhibits 480-550 were admitted *de bene* and the Court reserved their admission depending on the Court's findings of fact with respect to whether the FSC subsidiaries or Synnex were Defendants' agents, making statements by these entities attributable to Defendants as statements of a party opponent (which, for reasons discussed further below, the Court admits these documents and has considered them, along with the other evidence admitted, for the purpose of entering judgment in this case). Exhibits 551-558 were admitted in a final telephone status conference on June 29, 2017. The Court heard closing arguments from counsel on August 28, 2017.

III. FINDINGS OF FACT

A. The Parties and Their Products

1. AcBel Polytech Inc. ("AcBel") is an electronics company that manufactures and sells electronic components called power supply units ("PSUs"). 3:81:7-11; 3:215:12-13.[1]

2. EMC Corporation ("EMC") is an electronics company that manufactures data storage devices. 3:81:19-21.

3. The second generation Katina (the "Katina") is a PSU that AcBel sold to EMC for use in EMC's data storage devices ("DAEs"). 2:202:18-25; 3:82:18-22.

4. AcBel and EMC jointly developed the Katina which required the KA7805ERTM voltage regulator. 1:170:17-171:2; 6:14:3-17:18; 2:205:14-206:18; 2:14:22-15:6.

[1] Citations to the trial transcript are referenced as "[day]:[page]:[line]."

5. Fairchild Semiconductor ("FSC"), whether through Fairchild US or a FSC subsidiary, marketed itself as a "global brand" and "global leader." 8:65:17-24; Exh. 471.

6. Fairchild International is a Delaware holding company. 5:17:8-12; 7:171:2-172:10; Exh. 234.

7. Fairchild US is a Delaware corporation that, in 2010, owned three manufacturing facilities in the United States, but no manufacturing facilities outside the United States. 5:15:1-6; 7:168:13-169:11; Exh. 236. Fairchild US is in the business of manufacturing and selling semiconductor products. 7:169:12-20; 7:170:8-14; 8:22:6-17.

B. Defendants' Relationship with the FSC Subsidiaries

8. Fairchild US is a parent company and sole shareholder of the FSC subsidiaries. 7:164:19-23; Exhs. 230-231; 235; 466-468.

9. Fairchild US and the FSC subsidiaries[2] share a common interest in "advancing the brand." 8:22:3-17.

10. Fairchild Semiconductor Hong Kong Ltd. ("FSC Hong Kong") is a Hong Kong corporation that marketed and distributed FSC brand products in Asia and operated a Taiwan office. 5:8:12-21; 8:79:23-80:6; 8:80:20-21.

11. Fairchild Korea Semiconductor Ltd. ("FSC Korea") is a Korean corporation that manufactures FSC brand products. 5:8:22-9:3.

12. Fairchild Semiconductor PTE, Ltd. ("FSC Singapore") is a Singapore corporation that distributes and manages FSC brand products. 5:9:6-13; 7:173:2-5.

[2] Any subsidiaries of Defendants, e.g., Fairchild Semiconductor Corp. Korea, shall be referred to as, e.g., "FSC Korea."

13. Fairchild Semiconductor Suzhou Company, Ltd. ("FSC Suzhou") is a company in China that owns finishing facilities. 7:173:6-174:1.

14. FSC subsidiaries often referred to their products under the FSC name and logo. See, e.g., 4:126:11-24; 4:152:13-16; Exhs. 6; 228; 265; 271; 277; 298; 299; 366; 435; 436; 443; 503; 504; 505; 511; 512; 513; 515; 516; 525; 526; 527; 530; 531; 533.

15. Delva, Fairchild US's former senior vice president, general counsel and corporate secretary, served on the board of directors of several of the FSC subsidiaries, including but not limited to FSC Korea, FSC Singapore, FSC Hong Kong, FSC Suzhou, FSC India, and FSC Beijing. 7:161:4-11; 7:162:24-163:6; 7:166:12-14; 8:56:12-16; Exh. 236.

16. There are certain shared assets between Fairchild US and the FSC subsidiaries, such as licenses, that are sold between entities. 8:21:6-16. The Defendants and the FSC subsidiaries also share a common domain name. 8:21:24-8:22:2.

17. Fairchild US also has some worldwide departments, such as sales and marketing, that aid and support the FSC subsidiaries. 8:23:10-13.

18. Sometimes these departments were led or staffed by Fairchild US employees and sometimes by FSC subsidiary employees. 8:23:14-19.

19. Fairchild US and the FSC subsidiaries have authorized certain employees to authorize actions taken by each company. 8:58:10-59:23; Exh. 470.

20. Although each Fairchild subsidiary is organized as an independent corporation under local law, with its own organizational documents, board of directors, management, financial records, assets, and liabilities, 7-163:12-164:18, the financial affairs of Fairchild US and the FSC

subsidiaries were interdependent. 8:60:3-8:62:21; Exh. 470; see 8:126:11-127:1; 8:129:19-23; 5:22:5-10; Exh. 479.

21. The FSC subsidiaries' profit and loss statements were wrapped up into the profit and loss statement for Fairchild US, for which Hertz, a vice president for Fairchild US, had reporting responsibilities. 5:22:5-10.

22. Although Fairchild US and Fairchild International did not exercise day-to-day control of operations of the FSC subsidiaries (which was done by local management), 7-164:19-165:5, Fairchild US involved itself in failure analysis of a subsidiary's product when there was a large claim and it needed to protect the FSC brand. 5:20:8-19; 6:129:19-130:2.

23. Fairchild International was the corporate entity that traded under the ticker symbol FCS. 8:66:3-8; Exh. 471.

24. Fairchild US and the FSC subsidiaries were organized into cross-entity divisions staffed with employees "around the world … work[ing] for multiple subsidiaries…to collaborate" to promote "the global business, the global brand." 8:30:3-12; see 8:23:10-19; 4:156:11-157:17; 2:167:9-14; 8:42:9-43:5; 8:29:19-30:19; 8:32:13-33:9; 8:37:18-38:20; Exhs. 469; 471.

25. Some employees of FSC subsidiaries reported directly to employees of Fairchild US, 2:148:7-149:6; 3:119:13-120:11; 3:120:17-25; 6:129:19-24 (Fairchild US oversaw failure analysis); 4:142:21-4:143:9; 5:29:3-9 (Hertz tracking failure rates); 8:24:1-17; 8:31:1-4; Exhs. 261 at 1; 263 at 1; 264; 266 at 2; 267 at 1; 274 at 1; 275 at 1; 276; 278; 279; 281; 282 at 1; 289 at 1; 290 at 1; 444 at 1; 445; 469; 479 at 1; 517; 542 at 1, and, in regard to AcBel, that reporting structure included Fairchild International, 8:25:4-18; Exh. 469.

C. The KA7805 or M7 Voltage Regulator

26. The KA7805ERTM voltage regulator ("KA7805" or "M7") is a consumer-grade part that costs about $0.13. 5:18:8-9; 6:115:18-116:7.

27. A voltage regulator is aimed at producing a constant output of voltage. 7:44:3-6. The M7 receives a range of seven to twenty-five volts of input and then produces output of five volts. 2:17:18-22.

28. The KA7805 is a "common material" not specifically made for AcBel. 4:55:16-56:2; Exh. 127 at 501626.

29. The KA7805s were commodity products sold to many customers for many applications. 6:115:7-17.

30. The KA7805s were manufactured by FSC Korea, assembled by FSC Suzhou, and distributed by FSC Singapore and FSC Hong Kong. 5-15:7-16:9; 7-172:18-173:20.

31. The data sheet for the M7 identifies it as a FSC product. Exh. 2.

D. Negotiations Regarding the KA7805 Voltage Regulator

32. AcBel purchasing supervisor, Tung, negotiated prices for voltage regulators in 2010. 1:37:19-22, 1:38:2-6.

33. Tung of AcBel negotiated primarily with Alan Lo of FSC Hong Kong, based in Taiwan. 1:38:2-17; 1:39:6-10; 1:98:7-21.

34. This price negotiation for voltage regulators would occur annually. 1:46:4-6.

35. These annual price negotiation meetings were attended by Tung from AcBel, Alan Lo of FSC Hong Kong, KK Lin of FSC Hong Kong, and representatives of Synnex. 1:46:1-24; 1:111:20-112:1.

E. Problems with the Shrunk-Die Version of the KA7805 Voltage Regulator

36. FSC Korea manufactured a new "shrunk-die" version of the KA7805 between January and July 2010. 2:161:1-11; 5:23:5-9; 6:25:12-17; Exhs. 54; 202 at 9; 439.

37. The voltage regulator was changed by shrinking the die, which means that the voltage regulator's die was made smaller which required the movement of some components, including the zener diode. 2:18:4-19:18, 2:22:12-25.

38. FSC Korea ceased manufacturing the shrunk-die KA7805 because, in May 2010, there was a reported quality incident with an unexplained root cause in a part called the LM7805. 5:23:10-13; 6:130:3-8.

39. The LM7805 uses the same die as the KA7805, but in a different package. 6:130:9-19.

40. Fairchild Korea investigated the May 2010 report, concluded the customer was overstressing the part, and recommended that the customer revert to the large-die version of the LM7805. 6:130:20-131:4.

41. In or around July 2010, Eric Hertz of Fairchild US recommended that FSC Korea cease producing the shrunk-die KA7805 and revert to the larger die KA7805 because the part volume was too small to justify producing both and then FSC Korea decided to do so. 5:23:8-24:9.

42. FSC Korea was still investigating this failure report when AcBel reported its problem with the M7 in December 2010. 6:128:25-129:11.

43. AcBel purchased 195,000 shrunk-die M7s through Synnex. 4:40:19-21; 4:48:8-9.

44. Thousands of shrunk-die M7s failed, causing PSUs in EMC's DAEs to fail. 1:165:1-5; 3:32:23-33:8; Exh. 201 at 3.

45. The failure rate of M7s in EMC's DAE in the field was 7.5%. 2:45:20-22; 2:76:8-15.

46. 26,000 PSUs needed to be replaced for EMC customers. 3:23:16-18.

47. The normal rate of failure of PSUs is .2% failure rate. 3:56:20-22.

48. Once M7 failure was remedied, the failure rate returned to .2% failure rate. 3:58:8-18.

F. Working to Resolve the Failure of the M7 Voltage Regulator

49. 8D Reports are industry standard for investigating component failure. 2:29:8-23; Exh. 365.

50. 8D Reports for the M7 reflected failure because the shrunk die did not maintain output voltage at five volts. 2:17:25-18:3.

51. On or about December 3, 2010, AcBel received notice from EMC that a PSU had failed. 3:220:16-22; Exh. 353.

52. During discussion about the M7 failure, AcBel shared with Fairchild that EMC was the end-user of the M7. 4:11:24-12:6; Exh. 434.

53. EMC had not previously communicated its use of M7 to Fairchild US or any FSC subsidiary. 3:55:21-23.

54. Lin from FSC Hong Kong, at AcBel's request, formed a task force team to address the M7 failure issue. 4:14:22-15:2.

55. To work through the M7 issue, there were conference calls and meetings between representatives of AcBel, ISMI, EMC and FSC. 3:109:24-25.

56. The M7 problem was escalated to and then managed by Fairchild US. 2:152:13-23; 4:142:21-143:9; Exhs. 264; 274; 282; 285; 289 at 1; 290 at 1; 491 at 1.

57. Kirk Olund was formerly worldwide director of Customer Quality Engineering at Fairchild US, 2:147:25-148:9; Exh. 245, and was the lead person evaluating the M7 failure from December 2010 until January 2011. 2:152:13-23.

58. Olund initially concluded that the zener diode, type of passitivization and location of the zener diode caused the failure. 2:154:1-9.

59. As a result of applying a mathematical model, Olund determined that there would be a 5.9% failure rate after twelve months for the M7. This was not based upon field failure data. 2:162:2-10.

60. Olund initially opined in internal emails that there may have been an issue with initial reliability testing not minimizing power dissipation, 2:169:3-10; Exh. 264, but he acknowledged that he has no personal knowledge of how initial reliability testing was actually done. 2:169:14-17.

61. As a result of the M7 failure discussions, AcBel requested a "guarantee letter" from FSC that it had reverted to the non-shrunk die M7. 4:29:9-30:8, Exh. 54.

62. FSC sent this "guarantee letter" regarding the reversion to the non-shrunk die M7 to AcBel on December 22, 2010. 4:126:5-7, Exh. 54.

63. Hertz of Fairchild US signed this letter at FSC Hong Kong's request. 4:29:8-22; 5:19:24-20:7; 5:35:22-37:6; Exh. 54.

G. Direct Dealings Between FSC and AcBel (Synnex Was An Agent)

64. The price for voltage regulators was set by FSC Hong Kong. 1:47:16-21.

65. As noted above, representatives of AcBel, FSC Hong Kong and Synnex[3] would attend annual price negotiation meetings. 1:46:7-47:1, 1:50:4-52:5, Exh. 354.

66. AcBel would purchase voltage regulators from Synnex and would send purchase orders ("POs") to Synnex for this purpose. 1:109:4-8, Exh. 195.

67. If AcBel had a shortage of voltage regulators, and Synnex had inventory, AcBel would contact Synnex. Otherwise, AcBel would contact FSC Hong Kong. 1:62:2-7.

68. Synnex was not a "buy/sell distributor" because it did not, as one example, set price for the voltage regulators. 1:63:2-6.

69. AcBel and FSC Hong Kong had to agree on any price changes. 1:62:8-63:6; 1:39:3-5; 6:45:24-6:46:14.

70. AcBel directly negotiated the price and volume forecasts for FSC parts (including the M7) with FSC Hong Kong in emails and annual meetings. 1:38:12-17; 1:39:1-40:11; 1:44:8-9; 1:45:10-12; 1:46:4-22; 1:50:21-24; 1:91:4-21; 1:97:20-23; 1:98:7-21; 4:147:5-13; 5:18:10-14; 6:46:24-6:47:7; 6:174:11-21; Exhs. 23; 24; 174-75; 270; 296; 332; 354; 550.

71. FSC Hong Kong representatives involved in the annual price negotiations with AcBel referred to AcBel as its "customer." 1:68:22-69:6, 1:72:7-9; Exh. 356.

72. Synnex was a distributor for manufacturers other than FSC. 1:98:24-99:6; Exh. 361.

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[3] "Synnex" refers to the companies Synnex Technology International and Synnex Electronics Hong Kong Ltd.

73. Synnex merely provided logistical and administrative support for the sale of FSC parts to AcBel. 1:46:23-1:47:1; 1:61:15-1:62:7; 6:46:6-14.[4]

74. Synnex called itself Fairchild's agent. 1:55:5-14; 1:81:2-16.

75. AcBel indicated to FSC Hong Kong that it understood Synnex to be their agent. 1:81:23-25; 1:83:16-84:9; Exh. 360.

H. AcBel Did Not Waive Any Implied Warranties as to the M7 Voltage Regulators

76. In the course of the trial, the Defendants presented several versions of FSC's terms and conditions; at no point in the trial did Defendants articulate which version might apply to AcBel's purchase of the M7s and even Hertz was unable to identify what version was referenced in Fairchild's 8D reports. 5:33:4-12; Exhs. 247; 336 at 3; 364 at 3; 461; 473 at 4; 474.

77. Kao disputed that AcBel ever accepted a limited liability warranty from FSC. 6:41:11-14.

78. No FSC terms and conditions were provided to AcBel at the annual negotiations about the price of M7s. 1:84:20-85:2.

79. If Fairchild US or any FSC subsidiary had presented written terms and conditions limiting liability, AcBel would have rejected them in accordance with its policy to refuse liability limitations. 6:40:22-41:14; 6:52:13-17.

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[4] The Defendants attempted to disprove that AcBel negotiated pricing directly with FSC by referencing a 2011 email exchange with Synnex employees in which a price increase for FSC parts was discussed. 1:123:7-125:7; Exh. 362. But Tung explained that AcBel had already negotiated the price increase with FSC Hong Kong, 1:24:17-20, and this email exchange was a request for AcBel to update the price in its computer system. 1:124:9-12.

80. If a limited liability warranty had been proffered, AcBel's purchasing department would have looked for another supplier for this part. 6:41:7-10.

81. Synnex did not provide AcBel with FSC terms and conditions limiting liability in connection with the M7 sales prior to December 2010. 1:85:21-86:2; 1:89:21-90:6; 8:111:25-112:1-2.

82. To the extent AcBel had notice of FSC terms and conditions (or excerpted paragraphs), it was in its capacity as a FSC distributor between 1999 and 2003, not as a customer, or in connection with AcBel's rejection of them during the settlement of claims relating to defects in other Fairchild parts including the KSH200-TF. 6:66:19-80:10; 8:115:13-24; Exhs. 446; 455 at 3.

83. FSC compensated AcBel for its claims without adhering to the liability limitations that Defendants now claim applies. 6:53:4-17; 6:53:23-54:2.

84. Although the Defendants contended that all sales by FSC subsidiaries were subject to the same terms and conditions, 6:131:20-23, and that these terms and conditions, including disclaimer of all implied warranties, were easily accessible on the Fairchild website, where the industry goes to look for product information, 5:41:1-42:11; 6:131:24-137:24, there is neither evidence that AcBel saw or agreed to terms and conditions of sale posted on the Fairchildsemi.com website, nor evidence that any terms and conditions existed on the Fairchildsemi.com website when AcBel began purchasing M7s.

85. On December 20, 2010, Tung requested a copy of the FSC warranty from Synnex because she had heard that there was a two-year warranty on FSC products. 1:138:17-141:15; Exh. 336E.

86. In response, on December 22, 2010, Synnex provided a copy of the FSC terms and conditions that disclaimed all implied warranties. 1:143:24-145:7; Exh. 336.

87. On December 29, 2010, Tony Wan of AcBel sent an email to Greg Lucini of ISMI about the terms applicable to the KA7805. He stated that the "standard policy is to swop [sic] the component. How much we can negotiate beyond their standard policy will be the main topic between Fairchild and AcBel." 6:178:19-179:1; Exh. 193.

88. On December 30, 2010, Julia Liao, a member of AcBel's sales and marketing department, asked for a copy of the FSC warranty. In response, Tung forwarded the terms and conditions she had received from Synnex eight days earlier, specifically identifying the section disclaiming implied warranties. 1:148:18-152:14; Exh. 364.

89. The front page and bottom of each subsequent page of each 8D report regarding the M7 from FSC contains boilerplate language referring to the FSC product warranty policy. 5:13:20-14:11; Exh. 390.

I. Shrunk-Die M7s Met Industry-Standard Reliability Testing Requirements

90. The Joint Electron Device Engineering Council ("JEDEC") is a body that sets industry accepted standards for assessing reliability in the semiconductor component industry. 7:61:11-62:5.

91. FSC brand products are tested using JEDEC standards. 6:120:23-121:12.

92. The qualification testing that FSC Korea performed on the shrunk-die KA7805 included all of the elements of a JEDEC-qualified industry-standard process, including minimum-power dissipation testing. 6:121:13-126:22; 7:65:9-75:25; Exh. 460; see 2:168:25-175:3.

93. The shrunk-die KA7805 met industry-standard JEDEC reliability testing requirements. 4:57:4-10; 7:74:15-75:22; Exhs. 435 at 130; 460.

94. When the shrunk-die KA7805s left the factory, they were devices qualified as per industry standards. 7:110:19-21.

J. The Shrunk-Die KA7805 Did Not Have A Design Defect

95. The normal failure rate of a whole power supply unit is 0.1%. 2:73:4-6.

96. Excluding the problems AcBel reported, the shrunk-die KA7805's failure rate was .012%. 5:25:1-18.

97. The root cause of the failures EMC experienced was a sequence of events that could not have been discovered through industry standard qualification tests including the JEDEC testing performed on the KA7805. 7:99:22-100:12.

98. According to the Defendants' expert, Dr. Fair, a sequence of events needed to occur, in sequence, to trigger the shrunk-die KA7805's failure: (1) moisture penetration through the epoxy encapsulation of the KA7805 to the die surface; (2) a mechanism for generating hydrogen from moisture on the die surface, such as a biased anode and an electromechanical corrosion reaction; (3) a way for the generated hydrogen to get underneath the silicon nitride at the edge of the die and find its way to the zener diode; (4) a trigger for the molecular hydrogen to form atomic hydrogen; and (5) that all of these occurrences happen at relatively low temperatures. 7:100:13-102:11.

99. A product that fails in this sequence of circumstances is not defective, and the location of the zener diode in the shrunk-die KA7805 was not a design flaw. 7:99:22-25; 7:102:12-24.

100. JEDEC testing, the industry standard, did not and would not uncover this failure mechanism. 7:102:18-24.

101. The failure symptom in the shrunk-die KA7805 could only be duplicated by running a HAST ("Highly Accelerated Stress Test"), with bias, followed by a LTOL ("Low Temperature Operating Life") test. 4:56:11-57:3; 7:91:11-21; 7:97:2-98:10; Exh. 435 at 129.

102. The combination of a HAST test with an LTOL test is not a JEDEC standard, and would not have been envisioned as an industry standard reliability qualification for the KA7805 because the two tests, in combination, create extreme conditions designed to make devices fail. 7:91:22-92:12; 7:96:3-25.

103. Sequencing of HAST and LTOL testing back to back to test reliability would likely result in no component passing the test. 7:128:2-6.

104. AcBel's expert, Daun-Lindberg, concluded, among other things, that the voltage regulators had a defective design, and this was the root cause of the AcBel PSU problem in EMC's DAE; AcBel's soldering process was within industry standards; and FSC chose not to inform AcBel of the defective die and switched back to the original die. 1:164:20-166:4.

105. Neither Daun-Lindberg nor AcBel conducted any independent testing; his opinion was based on Fairchild's failure analysis, the 8D reports, as well as AcBel and EMC's information about processing. 2:123:4-25. The failure analysis required the creation of conditions, through a combination of HAST and LTOL tests together, that created much more extreme conditions than would exist in the real world. 2:135:6-15.

106. Daun-Lindberg believed that the new placement of the zener diode in the shrunken-die KA7805 made it susceptible to more moisture exposure, impairing its electrical function. 2:55:22-56:19.

107. Although the M7 failed for different customers in different environments, 7:131:21-132:4, the failure rate of same was below the normal failure rate, 5:25:1-18, and Daun-Lindberg conceded that no one can say what the actual mechanism of moisture penetration into the M7 is, only that there was moisture sensitivity, 2:95:22-98:5.

108. That is, Daun-Lindberg could not identify the specific manner in which moisture caused the shrunk-die KA7805 to fail. 2:100:22-102:8.

109. FSC's reliability testing on KA7805 comported with JEDEC standards, which are the industry standards. 7:65:9-66:11; Exh. 460.

110. The reliability testing is done at the end of the design process, before any KA7805s are released into the field. 7:75:7-15.

111. The reliability testing requires zero failures, and the tests of the KA7805 had zero failures. 7:74:15-22.

112. Part of the preconditioning test and solderability test included determining whether KA7805 would withstand soldering. 7:69:21-70:5.

113. In Dr. Fair's opinion, there was also no JEDEC test that could have determined the impact of moving the zener diode in the shrunken-die M7. 7:102:17-24.

114. FSC had ISE testing done on the 1,995 returned VRs, except for 322 VRs that were too damaged to test. 7:122:3-123:7.

115. 1,124 of those produced VRs failed the HAST and LTOL testing (70%), but they all displayed a different failure mechanism than those that failed in the field. 7:123:18-125:12.

K. The Problems EMC Experienced With the Shrunk-Die KA7805 May Have Originated When AcBel Soldered the KA7805s To PSU Circuit Boards

116. AcBel soldered the KA7805s to circuit boards in the PSUs. 4:30:21-32:11.

117. The problem with the shrunk-die KA7805 may have resulted from delamination caused by extreme heat during AcBel's wave soldering process. 3:59:11-60:13; Exh. 204 at 212.

118. Delamination was not present when the KA7805s originally shipped. It occurred when the KA7805s were in the care of AcBel. 7:108:18-109:4.

119. Soldering conditions have random variations over time, by the hour, and some variance in the temperature of AcBel's wave soldering could have caused some shrunk-die KA7805s to delaminate. 6:175:18-25; 7:143:20-24; Exh. 219 at 41247-48.

120. This delamination may have been caused in the soldering process, but if it was not created in the soldering process, then it would not occur at all. 3:61:10-62:3.

121. In 2008, AcBel received a process change notice ("PCN") from Synnex notifying it of the KA7805's redesign. 3:173:5-24; 3:182:3-18; 6:166:14-167:4; Exhs. 70E; 71; 377. AcBel follows JEDEC standards, including those for qualification testing. 4:76:3-6.

122. Pursuant to JEDEC standard JEP 150, the PSU board manufacturer, in this case AcBel, had responsibility for assessing reliability after board assembly is completed. 7:57:12-58:19.

123. JEP 150.01 states that "if the effect of assembly conditions on the component is not known . . . it is recommended that assembly-level testing be performed to determine if there are any adverse effects on that component." Exh. 343 at 1.

124. Pursuant to JEDEC standards, AcBel could have requested samples of the shrunk-die KA7805 so that it could perform qualification testing on the shrunk-die KA7805 in AcBel's own environment or qualification. 2:122:25-123:25; Exh. 346 at 3.

IV. CONCLUSIONS OF LAW

A. Agency

1. Defendants' Control of the FSC Subsidiaries

AcBel contends that Defendants are responsible for the shrunk-die M7's allegedly defective design, because FSC Korea was acting as an agent under Defendants' control when it designed and produced the shrunk-die M7, and FSC Hong Kong acted as an agent under Defendants' control when it negotiated with AcBel and sold it shrunk-die M7s. "An agency relationship is created when there is mutual consent, express or implied, that the agent is authorized to act on behalf and for the benefit of the principal, subject to the principal's control." RFF Family P'ship, LP v. Link Dev., LLC, 907 F. Supp. 2d 155, 161 (D. Mass. 2012) (citing Theos & Sons, Inc. v. Mack Trucks, Inc., 431 Mass. 736, 729 N.E.2d 1113, 1119 (2000)). "It is the conduct of the principal, not the agent, that creates apparent authority." Id. (citing Smith v. Jenkins, 718 F. Supp. 2d 155, 165 (D. Mass. 2010)).

The Court rules that the FSC subsidiaries were Defendants' agents. While parent corporations are entitled to "control, direct, and supervise the subsidiaries to some extent," In re Lernout & Hauspie Sec. Litig., 337 F. Supp. 2d 298, 312 (D. Mass 2004) (internal quotation marks and alterations omitted), the Defendants' roles in the business of the FSC subsidiaries extended beyond that. In addition to structuring the FSC subsidiaries' boards of directors to retain control over all high-level decisions such as spending, Fairchild US and Fairchild International employees were also assigned to supervise multi-company departments, including employees from the Fairchild subsidiaries. Furthermore, when problems with the shrunk-die KA7805 arose, Fairchild US involved itself further in the FSC subsidiaries' affairs by intervening to protect their mutual

brand by, *inter alia*: (1) recommending that FSC Korea cease production of the shrunk-die KA7805 in response to customer complaints; (2) writing a letter to AcBel, at FSC Hong Kong's request, confirming that the KA7805 would revert to the original design; and (3) forming a "cross-entity task force" to manage this crisis in its subsidiaries' business.

Even as Fairchild US and the FSC subsidiaries were separate entities, D. 280 at 16-18, this porous wall between Defendants and the FSC subsidiaries was not akin to exercising "the normal incidents of stock ownership, such as the right to choose directors and set general policies," Baker v. Raymond Int'l, Inc., 656 F.2d 173, 180-81 (5th Cir. 1981), but rather showed the capability to exercise "actual, participatory and total control of the subsidiary," Akzona Inc. v. E.I. Du Pont De Nemours & Co., 607 F. Supp. 227, 237 (D. Del. 1984). In other words, when a crisis presented itself, Fairchild US abandoned the parent-subsidiary formalities to involve itself directly as needed to resolve the day-to-day management of its subsidiaries' product crisis. Fairchild US's ability to intervene in this manner demonstrates an agency relationship. See White's Farm Dairy, Inc. v. De Laval Separator Co., 433 F.2d 63, 64-67 (1st Cir. 1970). When an agency relationship has been established, such that the "defendant retains control of the dealings, privity may exist between the plaintiff and defendant as to that contract." D. 280 at 6 (citing White's Farm Dairy, Inc., 433 F.2d at 66).[5]

[5] Much of AcBel's evidence addresses the relationship between Fairchild US and the FSC subsidiaries, as opposed to the relationship with Fairchild International. The evidence, however, demonstrates, at the very least, that Fairchild International employees were at the top of the reporting structure with respect to AcBel. 8:25:4-18; Exh. 469. To the extent that the Defendants even contend that Fairchild International stands on separate footing than Fairchild US as to the agency argument, the Court does not resolve any such distinction given its ultimate ruling in favor of both Defendants on other grounds, as discussed infra.

Where, as AcBel contends, the Defendants are so intermingled with the conduct of the FSC subsidiaries as described above, the subsidiaries are its agents for the purposes of liability. Alternatively, AcBel argues that the Defendants are liable under the "apparent manufacturer doctrine." See Lou v. Otis Elevator Co., 77 Mass. App. Ct. 571, 582 (2010). To the extent that the Court needs to reach this argument in light of its ruling above, the Court rejects the Defendants' argument that the doctrine is or should be limited to tort-based claims and could not apply here, D. 362 at 20, as it was not so limited in Lou or otherwise by Massachusetts courts.

2. Synnex as FSC Hong Kong's Agent

AcBel has shown, at a minimum, that Synnex had apparent authority to act as Defendants' agent. "Apparent authority is the power held by an agent or other actor to affect a principal's legal relations with third parties when a third party reasonably believes the actor has authority to act on behalf of the principal and that belief is traceable to the principal's manifestations." CSX Transp., Inc. v. Recovery Express, Inc., 415 F. Supp. 2d 6, 10 (D. Mass. 2006) (quoting Restatement (Third) of Agency § 2.03). "Apparent authority depends on the words or conduct of the principal, not the agent, and exists only when the third party's belief that the putative agent is authorized to act on behalf of the principal is reasonable." Solberg v. Borden Light Marina, Inc., No. 12-cv-11140-DJC, 2014 WL 4245987, at *3 (D. Mass. Aug. 25, 2014).

The Court rules that AcBel was reasonable in its belief that Synnex was acting as FSC Hong Kong's agent in the sale of KA7805s. Just focusing on the words and conduct of the principal, FSC Hong Kong, this FSC subsidiary referred to AcBel as its "customer," directly negotiated prices with AcBel in meetings, some in meetings involving Synnex, where Synnex was not authorized to offer prices of its own, and FSC Hong Kong did not correct AcBel's stated belief

that Synnex was its agent. Although apparent authority is determined by the conduct of the principal, the apparent authority that flowed from FSC Hong Kong was also echoed by the actions of the agent, namely Synnex's own statements that it was FSC Hong Kong's agent. "A principal's duty is said to be one to take 'appropriate steps' to destroy the lingering appearance of authority." Restatement (Third) of Agency § 3.11 note (e). Furthermore, Synnex's role in the sale of KA7805s was only in a support and administrative capacity. Despite being a seller to AcBel, Synnex's conduct further reflected AcBel's belief that it was acting as an agent rather than an independent distributor.

Having reached the conclusions above, the Court admits Exhibits 480-550, previously admitted *de bene*, as statements of a party opponent, and has considered them in reaching these findings of fact and conclusions of law.

B. Application of Fairchild's Limited Warranty

Defendants contend that all of AcBel's remaining claims must fail since any implied warranties were disclaimed by the limitation of warranty that applied to its purchase of the voltage regulators. An express warranty to exclude or modify the implied warranties of merchantability or fitness, however, must, among other things, be conspicuous. Mass. Gen. L. c. 106, § 2-316(2).

AcBel argues that Defendants have not carried their burden in showing that the writing was conspicuous and that Defendants have not shown that AcBel assented to the disclaimer of implied warranty. Defendants introduced several versions of the limited warranty into evidence which witnesses testified were sent, seen or otherwise available to AcBel during the course of the companies' relationship. See, e.g., Exhs. 247, 446, 461, 472-73.

Conspicuousness is defined by the UCC to mean a "term or clause . . . so written that a

reasonable person against whom it is to operate ought to have noticed it." Mass. Gen. L. c. 106, § 1-201. In determining whether a disclaimer was conspicuous, "the court takes into account the location of the clause, the size of the type, any special highlighting, such as boldface, capitalization or underlining, the clarity of the clause, and the sophistication of the contracting parties." Logan Equip. Corp. v. Simon Aerials, Inc., 736 F. Supp. 1188, 1197 (D. Mass. 1990) (citing Gilbert & Bennett Mfg. Co. v. Westinghouse Electric Corp., 445 F. Supp. 537, 547 (D. Mass. 1977)). The First Circuit has held that the implied warranties of merchantability and fitness can be disclaimed where the parties "prior course of dealings" would make the purchaser "expect[] the dispute to be resolved" with an express warranty. ITT Corp. v. LTX Corp., 926 F.2d 1258, 1267-69 (1st Cir. 1991).

The Court concludes that the limited warranty does not apply to bar AcBel's claims. Defendants did not convincingly identify which version of their limited warranty applied to AcBel in its purchase of the shrunken-die M7s at issue here, and no evidence convincingly demonstrated that a conspicuous limited warranty was available to AcBel and that AcBel assented thereto as to these purchases. AcBel's course of conduct with respect to limited warranties, with the FSC subsidiaries and otherwise, indicates that it would not have assented to such limited warranty. Furthermore, the FSC subsidiaries' past course of conduct, including compensating AcBel for other claims without reference to such limited warranty, make Defendants' position even more untenable.

Defendants alternately argue that even if AcBel was not aware of the express warranty, Synnex, as intermediary agent in the purchase of the voltage regulators, had agreed to the express warranty, making AcBel a subsequent purchaser "subject to any limitations or exclusions

contained in the express warranty even though he did not receive a copy of it." Boston Helicopter Charter, Inc. v. Agusta Aviation Corp., 767 F. Supp. 363, 376 (D. Mass. 1991). Subsequent purchasers have the burden of discovering whether any limitation on implied warranties exists. Theos & Sons, Inc. v. Mack Trucks, Inc., 431 Mass. 736, 740-41 (2000). However, the transfer of express warranty obligations to subsequent purchasers is only applied "[w]here the legality of the bargaining process is not at issue." Cummings v. HPG Int'l, Inc., 244 F.3d 16, 24 (1st Cir. 2001) (citing Sound Techniques, Inc. v. Hoffman, 737 N.E.2d 920, 927 (Mass. App. Ct. 2000)); see Boston Helicopter Charter, Inc. v. Agusta Aviation Corp., 767 F. Supp. 363, 376 (D. Mass. 1991) ("[h]aving concluded that there was indeed a valid assignment of the warranty, it is clear that the plaintiff is bound by the warranty's limitations and disclaimers"). In other words, this principle is intended to avoid "a disclaimer or warranty modification los[ing] its effectiveness upon resale of goods, with later purchasers receiving warranty rights denied to their sellers." Lecates v. Hertrich Pontiac Buick Co., 515 A.2d 163, 166 (Del. Super. Ct. 1986). In this case, the principle is inapplicable because of Synnex's apparent role as FSC Hong Kong's agent. It was not until December 2010, after the M7 failure in the PSUs, that AcBel employees were sent the limited warranty applying to its purchase of the voltage regulators at issue in this case, and thus AcBel could not have previously assented with respect to direct applicability of the limited warranty for this purchase.

C. Breach of Implied Warranty of Merchantability

Under Massachusetts law adopting the UCC, "[u]nless excluded or modified, a warranty that the goods shall be merchantable is implied in a contract for their sale if the seller is a merchant with respect to goods of that kind." Mass Gen. L. c. 106, § 2-314(1) (citation omitted). For

Claims I and XII, AcBel must show as to itself and EMC, respectively, that (1) Defendants "manufactured or sold the product that injured plaintiff;" (2) "a defect or unreasonably dangerous condition existed so that it was not suitable for the ordinary uses for which goods of that kind were sold;" (3) "plaintiff was using the product in a manner that defendant intended or that could reasonably have been foreseen;" and (4) "the defect or unreasonably defective condition was a legal cause of plaintiff's injury." Provanzano v. MTD Prod. Co., 215 F. Supp. 3d 134, 138 (D. Mass. 2016) (citing Lally v. Volkswagen Aktiengesellschaft, 45 Mass. App. Ct. 317, 698 N.E.2d 28, 43 (1998)). To demonstrate a breach of implied warranty under a design defect theory:

> "[I]t must be shown that the product was made according to an unreasonably dangerous design and does not meet a consumer's reasonable expectation as to its safety. The focus of the claim must be on the design itself, not on the manufacturer's conduct and it requires proof of the existence of a safer alternative design. A manufacturer may only be held liable for a defective design if it fails to design against the reasonably foreseeable risks attending the product's use in that setting."

Town of Westport v. Monsanto Co., No. 14-cv-12041, 2017 WL 1347671, at *4 (D. Mass. Apr. 7, 2017) (internal citations and quotations omitted), aff'd, 877 F.3d 58 (1st Cir. 2017).

The Court rules that Defendants did not breach the implied warranty of merchantability. The expert testimony and other evidence concerning the design and testing of the shrunk-die KA7805 shows that, to the extent moving the zener diode was a risk, there was no reasonably foreseeable risk in its design. Despite the shrunk-die KA7805's rate of failure, causing Fairchild US to recommend to FSC Korea that it halt production, AcBel failed to show that any reasonable testing regimen would have revealed any such defect. Defendants and the FSC subsidiaries tested the shrunk-die KA7805 according to JEDEC standards, and the failure could only be recreated by running HAST and LTOL tests, which are not required under the JEDEC standards and did

constitute a reliability test. That is, even with the benefit of expert testimony, AcBel did not show that the shrunk-die M7 was defective or had an unreasonably dangerous condition. Applying "the standard of knowledge of an expert in the appropriate field," Defendants "could not have [] discovered by way of reasonable testing" its risk of failure under these extreme circumstances. Vassallo v. Baxter Healthcare Corp., 428 Mass. 1, 23 (1998).

D. Breach of Implied Warranty of Fitness for Particular Purpose

Under Massachusetts law adopting the UCC, "[w]here the seller at the time of contracting has reason to know any particular purpose for which the goods are required and that the buyer is relying on the seller's skill or judgment to select or furnish suitable goods, there is unless excluded or modified . . . an implied warranty that the goods shall be fit for such purpose." Mass. Gen. L. c. 106, § 2–315. For Claims II and XIII, AcBel must show as to itself and EMC, respectively, that (1) Defendants had "reason to know of the particular purpose for which the buyer requires the goods;" (2) Defendants had "reason to know that the buyer is relying on the seller's skill or judgment in selecting or furnishing suitable goods;" and (3) that AcBel or EMC "in fact [] rel[ied] upon the seller's skill or judgment." Softub, Inc. v. Mundial, Inc., 53 F. Supp. 3d 235, 253 (D. Mass. 2014) (quoting Glyptal, Inc. v. Engelhard Corp., 801 F. Supp. 887, 897–98 (D. Mass. 1992)). Because AcBel has not offered any evidence demonstrating Defendants knew, or it had communicated, any particular purpose for the KA7805s, and furthermore that evidence at trial shows that the KA7805s were low-cost consumer-grade product parts intended for ordinary purposes, and were sold to many customers for many applications, the Court rules that Defendants have not breached the implied warranty of fitness for a particular purpose. See Rule v. Fort Dodge Animal Health, Inc., 604 F. Supp. 2d 288, 296–97 (D. Mass. 2009) (dismissing claim for breach

of fitness for a particular purpose because plaintiff's alleged particular purpose was "the ordinary purpose for which [the product] was used"), aff'd, 607 F.3d 250 (1st Cir. 2010).

V. CONCLUSION

In light of these findings of fact and conclusions of law, the Court enters judgment for the Defendants[6] on the remaining claims for breach of implied warranty, Counts I, II, XII and XIII.

So Ordered.

/s/ Denise J. Casper
United States District Judge

[6] In light of the Court's judgment in favor of the Defendants, the Court need not reach AcBel's evidence and arguments regarding damages or the Defendants' argument about lack of privity between EMC and the Defendants.